



08-26-05

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Date of Deposit 8/25/05

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re: Pat.Appn. Ser. No. 10/014,766 : Art Unit 2813

Filed 12/11/01 : Exr. E.J. Keilin

Inventors Dimitrakopoulos et al. : Atty. Dkt. No. YOR920010283US2

For: ORGANIC N-CHANNEL SEMICONDUCTOR DEVICE OF
N,N" 3,4,9, 10 PERYLENE TETRACARBOXYLIC DIIMIDE

TRANSMITTAL LETTER

MAILSTOP AF
Commissioner for Patents
P.O. Box 1450
Alexandria, Va.22313-1450

Sir:

Transmitted herewith is a Replacement Brief in 3 copies in this appeal in the above identified application, in Response to a 7/25/05 Notice communicated on a form PTOL-462(Rev9-04)that the 2/24/05 Appeal Brief is deemed to be non-compliant.

The rules and regulations directed to 37CFR1.192 have undergone extensive revision and have now been published as Section 41.37 in the BNA Patent Trademark and Copyright Regulations.

A pertinent point related to this appeal is that the terminology "issue" used heretofore has been replaced by the terminology "ground of rejection". This replacement brief follows the requirements of "41.37". A copy of the portion of the BNA Patent Trademark and Copyright Regulations, Section 37CFR41.37 directed to the Appeal Brief contents, understood to be current to Apr .28,05, is provided herewith in (ix) Evidence Appendix Section A.

Respectfully transmitted,

Alvin J. Riddles 8/24/05
Alvin J. Riddles
Reg.No. 17862

AVAILABLE COPY



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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
In Re: Pat.Appn. Ser. No. 10/014,766 : Art Unit 2813
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For: ORGANIC N-CHANNEL SEMICONDUCTOR DEVICE OF
N,N" 3,4,9, 10 PERYLENE TETRACARBOXYLIC DIIMIDE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

REPLACEMENT BRIEF ON APPEAL IN COMPLIANCE WITH 37CFR41.37
IN RESPONSE TO THE 7/25/05 NOTICE OF NON-COMPLIANT APPEAL BRIEF

In the appeal of the above identified application, the required items as specified in 37CFR41.37
in paragraphs (c)(1)(i) through (c)(1)(x) in consecutive order are provided as follows.

(i) Real party in interest

The entire right title and interest in the above identified application is the property of
International Business Machines Corporation of Armonk, N.Y.

(ii) Related appeals and Interferences

There are no related appeals and interferences.

(iii) Status of claims

Claims 10 - 12, here appealed, are all the elected claims in the application. They stand finally rejected in a 5/6/04 final rejection. A clean copy is provided in (viii) Claims Appendix.

The status of all claims is as follows:

Claim 1 cancelled

Claim 2 cancelled

Claim 3 cancelled

Claim 4 cancelled

Claim 5 cancelled

Claim 6 unelected

Claim 7 unelected

Claim 8 unelected

Claim 9 unelected

Claim 10 new claim - unamended - Independent -This claim is involved in this appeal

Claim 11 new claim - unamended -Dependent on claim 10 - This claim is involved in this appeal

Claim 12 new claim - unamended -Dependent on claim 10 - This claim is involved in this appeal

(iv) Status of Amendments

Following the 8/5/04 Notice of Appeal there were a number of events that could have a bearing on the record. Portions of the documentation of the events are provided in (ix) Evidence Appendix.

Subsequent to the 8/5/04 Notice of Appeal, a 8/13/04 Communication after Final, a 9/3/04 Advisory Action, and a 12/7/04 Notification of non-Compliance with 37CFR1.192(c) contain dialog considered pertinent to this appeal. Copies are provided in (ix) the Evidence Appendix Sections.

The Evidence Appendix Sections are as follows.

A copy of the portion of the Federal Regulations directed to the Appeal Brief content is provided in (ix) Evidence Appendix Section "A".

A copy of the drawings is provided in (ix) Evidence appendix Section "C".

A copy of the text portion of an 8/13/04 communication after final is provided in (ix) Evidence appendix Section "D".

A copy of the text portion of an 9/3/04 Advisory Action is provided in (ix) Evidence appendix Section "B".

A copy of the text portion of a 12/7/04 Notification of non-Compliance with 37CFR1.192(c) is provided in (ix) Evidence appendix Section "E", and,

A copy of the 7/25/05 Notification of non-compliance of the 2/24/05 appeal brief to which this brief is the response, is provided in (ix) Evidence Appendix section "F", and,

A copy of the Table of Citations is provided in (ix) Evidence Appendix Section "G".

All amendments directed to the merits are considered to have been entered.

(v) Summary of claimed subject matter

Through the invention , thin film field effect transistor devices with improved mobilities and current on/off ratios, are achieved. In the invention, an n-channel semiconducting film of a fused - ring tetracarboxylic diimide compound based on a perylene framework, is employed that exhibits a field effect electron mobility of the order of $0.6 \text{ cm}^2/\text{Vs}$, and provides device on/off ratios in the range of at least 10000. In the devices of the invention treatment of the contact electrodes as done heretofore in the art in order to obtain such high mobilities, is not required. The fused ring tetra carboxylic diimide compound based on a perylene framework semiconductor material possesses sufficient volatility that vapor phase processing techniques become available in manufacturing.

In Appellants' specification and drawings the invention is illustrated and described in connection with Figures 1,2 and 3 wherein Figures 1 and 2 illustrate each of two types of field effect transistor contact type structures and where the location of the thin film of $\text{N},\text{N}'' - \text{di}(\text{n}-1\text{H},$

1H-perfluorooctyl) perylene 3,4,9,10- tetracarboxylic acid diimide semiconductor material, labelled element 20, in each device will be located. In Figure 3 there is illustrated a diagrammatic depiction of the chemical structure of the element 20, the fused-ring tetracarboxylic diimide compound based on a perylene framework of N,N"-di(n-1)H, 1H-perfluorooctyl) perylene 3,4,9,10- tetracarboxylic acid diimide semiconductor material.

The invention structure is claimed through three "ex parte Jepson" type claims 10, 11 and 12.

The process claiming has not been elected in this examination and is not involved.

Claims 10, 11 and 12 read on the specification and drawings as follows.

In Fig. 1 In Fig. 2

10. In the fabrication of organic thin film field effect semiconductor devices wherein there is an n-channel having

10, 12

source and drain contacts separated by said n-channel,

10, 12

an improvement for producing high electron mobility in

20, 20

said n-channel without treatment of the interface between said contacts

20, 20

and said organic thin film

20, 20

characterized by,

20, 20

said organic thin film

being a compound with a N,N"-di(n-1)H, 1H-perfluorooctyl)

Fig. 3 Fig. 3

perylene 3,4,9,10- tetracarboxylic acid diimide structure.

Fig. 3 Fig. 3

In Fig. 1 In Fig. 2

11. The improvement of claim 10 wherein in said thin film field effect semiconductor devices there is a substrate with a gate electrode

18 18

14 14

| | | |
|--|-----------|-----------|
| that is covered by a gate dielectric, | 16 | 16 |
| said source and drain electrodes | 10 and 12 | |
| is covered by a gate dielectric , | 16 | 16 |
| are positioned in contact with said gate dielectric | 16 | 16 |
| and aligned with said gate, and, | 14 | 14 |
| said thin film field effect devices being characterized by | | |
| having an organic thin film semiconductor member | 20 | 20 |
| of a compound having an N,N"-di(n-1H, 1H-perfluorooctyl) | | |
| perylene 3,4,9,10- tetracarboxylic acid diimide structure | Fig. 3 | Fig. 3 |
| extending over said source and drain electrodes | 10 and 12 | 10 and 12 |
| and in contact with said gate dielectric. | 16 | 16 |
| | In Fig. 1 | In Fig. 2 |
| 12. The improvement of claim 10 wherein in said thin film field effect semiconductor | | |
| devices there is a substrate | 18 | 18 |
| with a gate electrode | 14 | 14 |
| that is covered by a gate dielectric, | 16 | 16 |
| said devices being characterized by having an | | |
| organic thin film semiconductor member | 20 | 20 |
| of a compound having an N,N"-di(n-1H, 1H-perfluorooctyl) | | |
| perylene 3,4,9,10- tetracarboxylic acid diimide structure | Fig. 3 | Fig. 3 |
| positioned in contact with and extending over said gate dielectric, and, | 16 | 16 |
| source and drain electrodes | 10 and 12 | 10 and 12 |
| positioned in contact with said organic thin film semiconductor member | 20 | 20 |
| and aligned with said gate. | 14 | 14 |

(vi)Grounds of rejection to be reviewed on appeal

Appellants position; is and has been that the organic n-channel device structures of this invention, in each and every claim in the application have the limitations:

N,N' - di(n-1H-perfluorocetyl)perylene 3,4,9,10-tetracarboxylic acid diimide
semiconductor material
and be in the form of a thin film.

which limitations impart to the device structures the new mobility and turn-off improvement properties. Whereas, in contrast, the examiner in the prosecution, appears be advancing a position, that all of appellants' contribution can be inferred from the art of record.

The following concise statements of the four grounds of rejection and the following arguments related to those grounds have been developed from the prosecution record including the rejections in the final rejection, the Communication after final located in the evidence appendix Section D, the advisory action located in the evidence appendix Section B, the 12/7/04 Notification of noncompliant appeal brief located in the evidence appendix Section E, and the 7/25/05 Notification of noncompliant appeal brief located in the evidence appendix Section F.

The concise statements of the grounds are as follows:

Ground 1. Whether the record supporting the final agency action meets the requirements of reasoned decision making as required by the administrative procedure act in the rejections of each of claims 10 - 12 while the specific limitations of thin film form of the perylene material is not present in the art that is being applied.

Ground 2. Whether the record supporting the final agency action meets the requirements of reasoned decision making as required by the administrative procedure act in the assertion that Claim 10 is unpatentable over the Struijk et al together with the Katz et al references.

Ground 3. Whether the record supporting the final agency action meets the requirements of reasoned decision making as required by the administrative procedure act in the assertion that Claim 11 is unpatentable over the Struijk et al, together with the Katz et al, and further in view of the Dodalapur, references.

Ground 4. Whether the record supporting the final agency action meets the requirements of reasoned decision making as required by the administrative procedure act in the assertion that Claim 12 is unpatentable over the Struijk et al, together with the Katz et al, and further in view of the Dodalapur, references.

(vii) Argument

Underlying the situation, with respect to all 4 grounds of rejection, is appellants position; as specified in the title and throughout the specification, that the organic n-channel device structures of this invention, have N,N' - di(n-1H-perfluorocetyl)perylene 3,4,9,10-tetracarboxylic acid diimide semiconductor material, and be in the form of a thin film, which limitations impart to the device structures the new mobility and turn-off improvement properties. Whereas, in contrast, the examiner in the prosecution, in essence appears be advancing a position, that the invention could be inferred from the art.

Appellants' position is that the title specifies the invention as being for an ORGANIC N-CHANNEL SEMICONDUCTOR DEVICE OF N,N" 3,4,9, 10 PERYLENE TETRACARBOXYLIC DIIMIDE.

The BRIEF DESCRIPTION OF THE DRAWINGS portion of the specification on page 2 states:

“Figures 1 and 2 are cross sectional views of N,N’3,4,9,10 perylene tetracarboxylic diimide semiconductor material organic thin film transistors, wherein in Fig.1 a bottom contact configuration is illustrated and in Fig. 2 a top contact configuration is illustrated.

Figure 3 is a diagrammatic depiction of the chemical structure of a fused-ring tetracarboxylic diimide compound based on a perylene framework used in the thin film of the invention such as the N,N’3,4,9,10 perylene tetracarboxylic acid diimide that is illustrated.”

The thin film of semiconductor material is given the same reference numeral 20 in Figs.1 & 2.

A demand is advanced by the examiner in the prosecution as an objection to the drawings that Figs 1 and 2 be each labelled “Prior Art” on an assertion that only that which is old is being described. In the final rejection there is reliance on ,” (See specification p 3 lines 3 - 5.)”, for support for the demand.

It is and has been appellants’ position that the content of those page 3 lines 3 - 5 are not the full description of the invention. You have to read past the intended BRIEF DESCRIPTION OF THE DRAWINGS portion of the specification on page 2 to get to the part relied on by the examiner(page 3 lines 3 - 5)and then those lines are only part of the narrative portion of the specification, they do not describe the invention and they are out of the context of the page 2 description. The true invention description continues on the immediately following page in lines 6-8.

“ An organic TFT is shown in Figs 1 & 2. The each TFT contains a source electrode 10, a drain electrode 12, a gate electrode 14, a gate dielectric 16, a substrate 18, and the semiconductor material of the invention, N,N’3,4,9,10 perlyene tetracarboxylic acid diimide,

labelled element 20."

It is thus clear that the structures shown in Figs. 1 and 2 each also require a film of the perylene material depicted in Fig.3, so that to accede to the demand and to introduce a "prior art" label would produce an incorrect impression and a reasoning record not supporting of the facts.

It is emphatically appellants' position that the prior art labelling called for in the demand involves much more than a procedural matter, it goes to the heart of the invention.

Vital distinguishing limitations have not been considered in the application of the references.

It is a well established principle of claim interpretation that all limitations must be given full consideration as exemplified by the holdings in such decisions as (1) In Re Geerdes, (2) Kropa v Robie & Malman and (3)Ex Parte Levengood.

In each of the rejections of the three claims 10,11, and 12 the distinguishing limitations of having N,N' - di(n-1H-perfluorocetyl)perylene 3,4,9,10-tetracarboxylic acid diimide semiconductor material, and that it be in the form of a thin film, are not given recognition, and further in the rejections of claims 11 and 12 the distinguishing limitation not given recognition includes the further requirement that the thin film semiconductor material be in contact with the gate dielectric.

With respect to Grounds 1 - 4 on whether the record supporting the final rejection, which is a final agency administrative action, meets the requirements of reasoned decision making as

the Adminstrative Procedure rules as established for an agency action in the (4. Dickenson v Zurko) decision and that that agency is expected to produce a record containing support for the action such that to a reviewing tribunal the reasoning that led to the decision is ascertainable as discussed in the decision (5. In Re Lee). The critical missing element in the record is that there is no guidance to the reviewer of the record as to how the decision was arrived at and whether the critical elements were reflected in the reasoning.

In view of the above, in appellate review, focus is respectfully urged, to consider that when the distinguishing limitations not heretofore considered are taken into consideration, the teaching of the references in the rejections will be viewed as not teaching appellants' invention and the benefits acquired justifies patentability of appellants claims 10,11 and 12.

(x) Related proceedings appendix

There is no information for this item.

Respectfully submitted,


Alvin J. Riddles
Reg. No. 17862



1 10. In the fabrication of organic thin film field effect semiconductor devices wherein there
2 is an n-channel having source and drain contacts separated by said n-channel,
3 an improvement for producing high electron mobility in said n-channel without treatment
4 of the interface between said contacts and said organic thin film characterized by,
5 said organic thin film being a compound with a N,N"-di(n-1H, 1H-perfluorooctyl)
6 perylene 3,4,9,10- tetracarboxylic acid diimide structure.

1 11. The improvement of claim 10 wherein in said thin film field effect semiconductor
2 devices there is a substrate with a gate electrode that is covered by a gate dielectric,
3 said source and drain electrodes are positioned in contact with said gate dielectric and
4 aligned with said gate, and, said thin film field effect devices being
5 characterized by having an organic thin film semiconductor member of a compound having an
6 N,N"-di(n-1H, 1H-perfluorooctyl) perylene 3,4,9,10- tetracarboxylic acid diimide structure
7 extending over said source and drain electrodes and in contact with said gate dielectric.

1 12 The improvement of claim 10 wherein in said thin film field effect semiconductor
2 devices there is a substrate with a gate electrode that is covered by a gate dielectric,
3 said devices being characterized by having an organic thin film semiconductor member of a
4 compound having an N,N"-di(n-1H, 1H-perfluorooctyl)perylene 3,4,9,10- tetracarboxylic
5 acid diimide structure positioned in contact with and extending over said gate dielectric, and,
6 source and drain electrodes positioned in contact with said organic thin film semiconductor
7 member and aligned with said gate.

(b) On failure to file the brief, accompanied by the requisite fee, within the period specified in paragraph (a) of this section, the appeal will stand dismissed.

(c) (1) The brief shall contain the following items under appropriate headings and in the order indicated in paragraphs (c)(1)(i) through (c)(1)(x) of this section, except that a brief filed by an appellant who is not represented by a registered practitioner need only substantially comply with paragraphs (c)(1)(i) through (c)(1)(iv) and (c)(1)(vii) through (c)(1)(x) of this section:

- (i) *Real party in interest.* A statement identifying by name the real party in interest.
- (ii) *Related appeals and interferences.* A statement identifying by application, patent, appeal or interference number all other prior and pending appeals, interferences or judicial proceedings known to appellant, the appellant's legal representative, or assignee which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal. Copies of any decisions rendered by a court or the Board in any proceeding identified under this paragraph must be included in an appendix as required by paragraph (c)(1)(x) of this section.
- (iii) *Status of claims.* A statement of the status of all the claims in the proceeding (e.g., rejected, allowed or confirmed, withdrawn, objected to, canceled) and an identification of those claims that are being appealed.
- (iv) *Status of amendments.* A statement of the status of any amendment filed subsequent to final rejection.
- (v) *Summary of claimed subject matter.* A concise explanation of the subject matter defined in each of the independent claims involved in the appeal, which shall refer to the specification by page and line number, and to the drawing, if any, by reference characters. For each independent claim involved in the appeal and for each dependent claim argued separately under the provisions of paragraph (c)(1)(vii) of this section, every means plus function and step plus function as permitted by 35 U.S.C. 112, sixth paragraph, must be identified and the structure, material, or acts described in the specification as corresponding to each claimed function must be set forth with reference to the specification by page and line number, and to the drawing, if any, by reference characters.
- (vi) *Grounds of rejection to be reviewed on appeal.* A concise statement of each ground of rejection presented for review.
- (vii) *Argument.* The contentions of appellant with respect to each ground of rejection presented for review in paragraph (c)(1)(vi) of this section, and the basis therefor, with citations of the statutes,

regulations, authorities, and parts of the record relied on. Any arguments or authorities not included in the brief or a reply brief filed pursuant to §41.41 will be refused consideration by the Board, unless good cause is shown. Each ground of rejection must be treated under a separate heading. For each ground of rejection applying to two or more claims, the claims may be argued separately or as a group. When multiple claims subject to the same ground of rejection are argued as a group by appellant, the Board may select a single claim from the group of claims that are argued together to decide the appeal with respect to the group of claims as to the ground of rejection on the basis of the selected claim alone. Notwithstanding any other provision of this paragraph, the failure of appellant to separately argue claims which appellant has grouped together shall constitute a waiver of any argument that the Board must consider the patentability of any grouped claim separately. Any claim argued separately should be placed under a subheading identifying the claim by number. Claims argued as a group should be placed under a subheading identifying the claims by number. A statement which merely points out what a claim recites will not be considered an argument for separate patentability of the claim.

(viii) *Claims appendix*: An appendix containing a copy of the claims involved in the appeal.

(ix) *Evidence appendix*: An appendix containing copies of any evidence submitted pursuant to §§1.130, 1.131, or 1.132 of this title or of any other evidence entered by the examiner and relied upon by appellant in the appeal, along with a statement setting forth where in the record that evidence was entered in the record by the examiner. Reference to unentered evidence is not permitted in the brief. See §41.33 for treatment of evidence submitted after appeal. This appendix may also include copies of the evidence relied upon by the examiner as to grounds of rejection to be reviewed on appeal.

(x) *Related proceedings appendix*: An appendix containing copies of decisions rendered by a court or the Board in any proceeding identified pursuant to paragraph (c)(1)(ii) of this section.

(2) A brief shall not include any new or non-admitted amendment, or any new or non-admitted affidavit or other evidence. See §1.116 of this title for amendments, affidavits or other evidence filed after final action but before or on the same date of filing an appeal and §41.33 for amendments, affidavits or other evidence filed after the date of filing the appeal.

(d) If a brief is filed which does not comply with all the requirements of paragraph (c) of this section, appellant will be notified of the reasons for non-compliance and given a time period within which to file an amended brief. If

appellant does not file an amended brief within the set time period, or files an amended brief which does not overcome all the reasons for non-compliance stated in the notification, the appeal will stand dismissed.

(e) The time periods set forth in this section are extendable under the provisions of §1.136 of this title for patent applications and §1.550(c) of this title for ex parte reexamination proceedings.

§ 41.39 Examiner's answer.

(a) (1) The primary examiner may, within such time as may be directed by the Director, furnish a written answer to the appeal brief including such explanation of the invention claimed and of the references relied upon and grounds of rejection as may be necessary, supplying a copy to appellant. If the primary examiner determines that the appeal does not comply with the provisions of §§41.31 and 41.37 or does not relate to an appealable action, the primary examiner shall make such determination of record.

(2) An examiner's answer may include a new ground of rejection.

(b) If an examiner's answer contains a rejection designated as a new ground of rejection, appellant must within two months from the date of the examiner's answer exercise one of the following two options to avoid *sua sponte* dismissal of the appeal as to the claims subject to the new ground of rejection:

(1) *Reopen prosecution.* Request that prosecution be reopened before the primary examiner by filing a reply under §1.111 of this title with or without amendment or submission of affidavits (§§ 1.130, 1.131 or 1.132 of this title) or other evidence. Any amendment or submission of affidavits or other evidence must be relevant to the new ground of rejection. A request that complies with this paragraph will be entered and the application or the patent under ex parte reexamination will be reconsidered by the examiner under the provisions of §1.112 of this title. Any request that prosecution be reopened under this paragraph will be treated as a request to withdraw the appeal.

(2) *Maintain appeal.* Request that the appeal be maintained by filing a reply brief as set forth in §41.41. Such a reply brief must address each new ground of rejection as set forth in § 41.37(c)(1)(vii) and should follow the other requirements of a brief as set forth in §41.37(c). A reply brief may not be accompanied by any amendment, affidavit (§§1.130, 1.131 or 1.132 of this title) or other evidence. If a reply brief filed pursuant to this section is accompanied by any amendment, affidavit or other evidence, it shall be treated as a request that prosecution be reopened before the primary examiner under paragraph (b)(1) of this section.

(c) Extensions of time under §1.136(a) of this title for patent applications are not applicable to the time period set forth in this section. See §1.136(b) of this title

(ix) Evidence appendix Section "B"

9/3/04

Advisory Action

1 of 2

| | | |
|-----------------|-----------------|------------------------|
| Advisory Action | Application No. | Applicant(s) |
| | 10/014,709 | DIMITRAKOPoulos ET AL. |
| | Examiner | Art Unit |
| | Erik Klein | 2813 |

—The MAILING DATE of this communication appears on the cover sheet with the correspondence address —

THE REPLY FILED 14 August 2004 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE. Therefore, further action by the applicant is required to avoid abandonment of this application. A proper reply to a final rejection under 37 CFR 1.113 may only be either: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114.

PERIOD FOR REPLY (check either a) or b))

a) The period for reply expires 3 months from the mailing date of the final rejection.
 b) The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.
 ONLY CHECK THIS BOX WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.138(a). The date on which the petition under 37 CFR 1.138(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

1. A Notice of Appeal was filed on 02 August 2004. Appellant's Brief must be filed within the period set forth in 37 CFR 1.192(a), or any extension thereof (37 CFR 1.191(d)), to avoid dismissal of the appeal.
 2. The proposed amendment(s) will not be entered because:
 (a) they raise new issues that would require further consideration and/or search (see NOTE below);
 (b) they raise the issue of new matter (see Note below);
 (c) they are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
 (d) they present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: _____

3. Applicant's reply has overcome the following rejection(s): _____
 4. Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
 5. The a) affidavit, b) exhibit, or c) request for reconsideration has been considered but does NOT place the application in condition for allowance because: See Continuation Sheet.
 6. The affidavit or exhibit will NOT be considered because it is not directed SOLELY to issues which were newly raised by the Examiner in the final rejection.
 7. For purposes of Appeal, the proposed amendment(s) a) will not be entered or b) will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.

The status of the claim(s) is (or will be) as follows:

Claim(s) allowed: none.

Claim(s) objected to: none.

Claim(s) rejected: 10-12.

Claim(s) withdrawn from consideration: 8-9.

8. The drawing correction filed on _____ is a) approved or b) disapproved by the Examiner.

9. Note the attached Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____

10. Other: _____


 Erik Klein

Continuation Sheet (PTO-1449)
10/014,766

Continuation of 5, does NOT place the application in condition for allowance because: The prior art teaches and/or suggests each of the features of the claimed invention in proper combination. Regarding the drawings, Examiner stands by the objections for the reasons of record, based upon the evidence of record that the transistors shown in Figs. 1 and 2 are admitted by Applicant to be prior art. To further clarify Examiner's position, it is noted that the instant specification states that reference character 20 in the conventional transistors shown in Figs. 1 and 2 is "the semiconductor material." (See instant specification, p. 2.) There is no requirement that the semiconductor material 20 be the parylene claimed. Examiner has taken nothing out of context, as alleged by Applicant, but rather has taken Figs. 1 and 2 in the context of the specification. Further in light of the fact that Applicant has provided references in the IDS as discussed in the specification, that very clearly show the transistors of Figs. 1 and 2, Applicant cannot properly now state that the semiconductor material 20 is now somehow the claimed parylene, in order to avoid the evidence of record to the contrary. Finally in this regard, drawings objections are NOT appealable subject matter but are, instead, patentable subject matter. 37 CFR 1.191(c) states "An appeal when taken must be taken from the rejection of all claims under rejection which the applicant or patent owner proposes to contest. Questions relating to matters not affecting the merits of the invention may be required to be settled before an appeal can be considered." Should Applicant disagree the objection to the drawings, Applicant must petition the matter. Furthermore, since there exists a rejection of claims 11 and 12 over Applicant's admitted prior art Figs. 1 and 2, the matter of whether the transistors of Figs. 1 and 2 are prior art must be settled prior to appeal in order for the Board to properly consider the rejection.

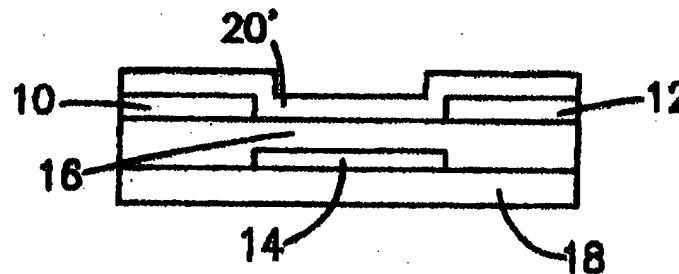


FIG. 1

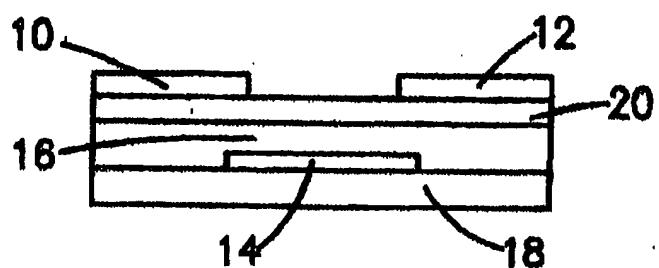


FIG. 2

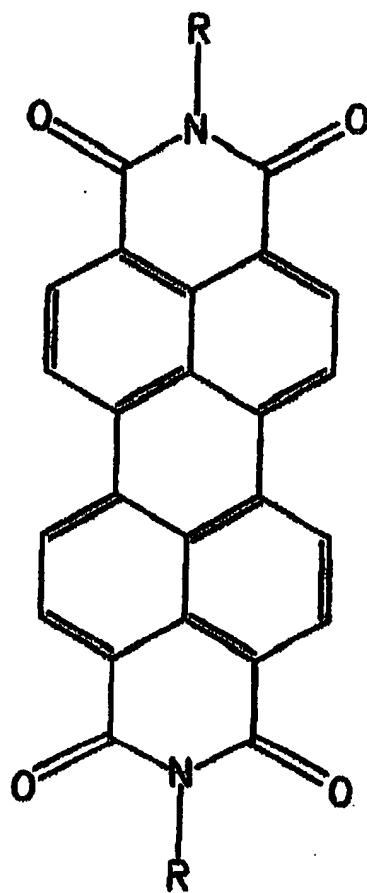


FIG. 3

N,N' PERYLENE-3,4,9,10,-TETRACARBOXYLIC ACID DIIMIDE

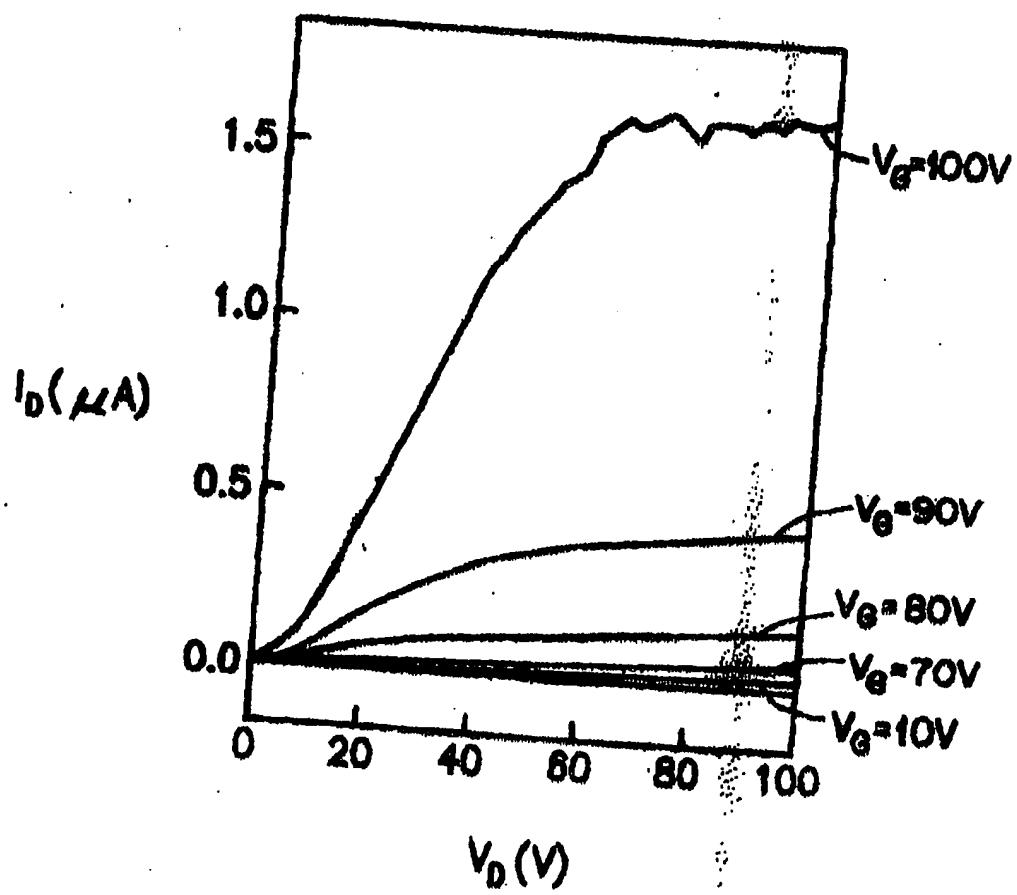


FIG.4

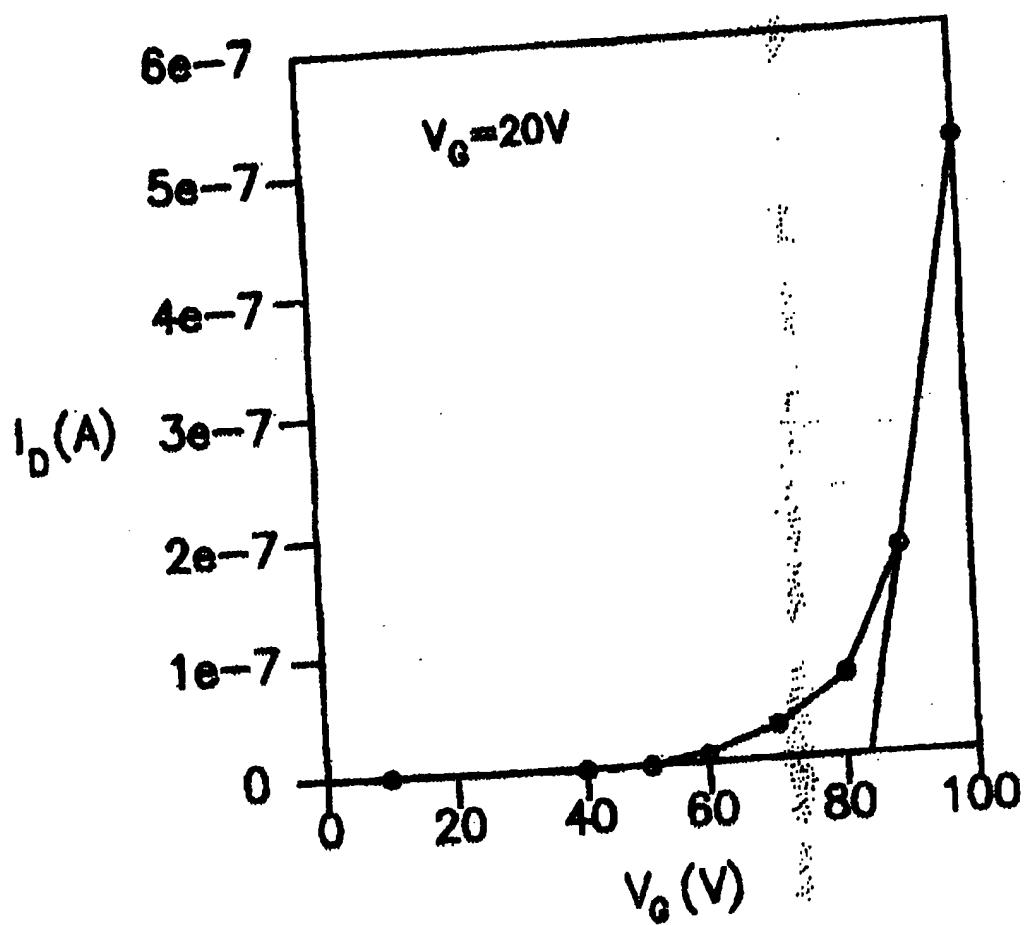


FIG. 5

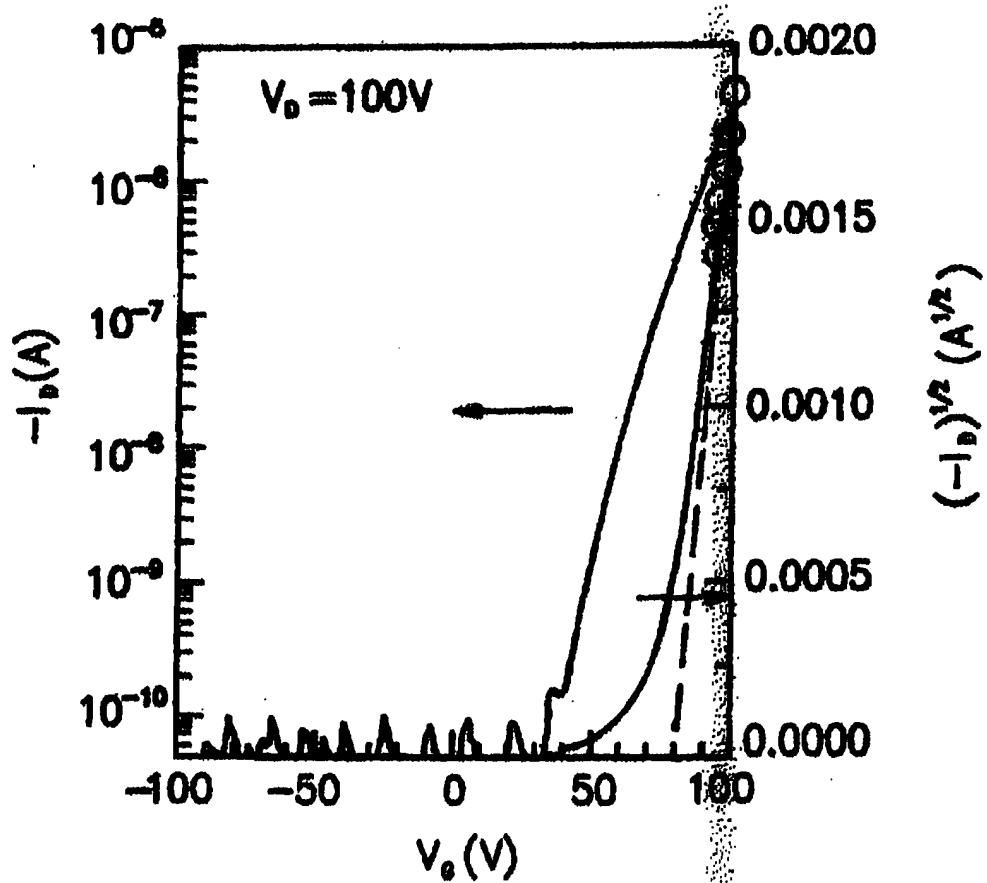


FIG. 6

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re. Appn. Ser. No. 10/014,766 : Art Unit 2813
Filed 12/11/01 : Ext. E.J. Keilin
Inventors: Dimitrakopoulos et al : Atty Dkt. YOR920010283US2

For: **ORGANIC N-CHANNEL SEMICONDUCTOR DEVICE OF
N,N" 3,4,9,10 PERYLENE TETRACARBOXYLIC DIIMIDE**

**COMMUNICATION UNDER 37CFR1.116
EXPEDITED PROCEDURE**

Mailstop AF
Commissioner For Patents
P.O. Box 1450
Alexandria, Va. 22313-1450
Sir:

The above identified application is under an 8/5/04 Appeal, Brief due 10/5/04. This communication is in response to the assertions in a 5/6/04 Final rejection, and provides supporting facts not addressed in the Final rejection that should place the application in condition for allowance or in the alternative in better form for resolution of the correct facts pertaining to the invention in the appeal.

This invention involves a thin film organic N,N"-di(n-1H, 1H-perfluorooctyl) perylene 3,4,9,10- tetracarboxylic acid diimide semiconductor material located at a different place in each of top and bottom contact complementary thin film transistor structures that imparts the device improvement properties to each type of transistor structure of better mobility and on/off ratio.

In Appellants' specification and drawings the invention is illustrated and described in connection with Figures 1,2, and 3 where Figures 1 and 2 illustrate each of the two types of transistor contact position devices and the location of the thin film of the material of the invention, labelled element 20, in each device, and where, in Figure 3 the material of the invention N,N"-di(n-1H, 1H-perfluorooctyl) perylene 3,4,9,10- tetracarboxylic acid diimide is illustrated.

The invention structure is claimed through three "ex parte Jepson" type claims 10, 11 and 12.

The process claiming has not been elected in this examination and is not involved.

Claims 10, 11 and 12 read on the specification and drawings as follows.

| | In Fig. 1 | In Fig 2 |
|---|-----------|-----------|
| 10. In the fabrication of organic thin film field effect semiconductor devices wherein there is an n-channel having | | |
| source and drain contacts separated by said n-channel, | 10, | 12 |
| an improvement for producing high electron mobility in | | |
| said n-channel without treatment of the interface between said contacts | 10, | 12 |
| and said organic thin film | 20, | 20 |
| characterized by, | | |
| said organic thin film | 20, | 20 |
| being a compound with a N,N"-di(n-1H, 1H-perfluorooctyl) | | |
| perylene 3,4,9,10- tetracarboxylic acid diimide structure. | Fig.3 | Fig 3 |
| | | |
| 11. The improvement of claim 10 wherein in said thin film field effect semiconductor devices there is a substrate | In Fig. 1 | In Fig. 2 |
| with a gate electrode | 18 | 18 |
| that is covered by a gate dielectric, | 14 | 14 |
| said source and drain electrodes | 16 | 16 |
| | 10 and 12 | 10 and 12 |

| | | |
|--|-----------|-----------|
| are positioned in contact with said gate dielectric | 16 | 16 |
| and aligned with said gate, and, | 14 | 14 |
| | | |
| said thin film field effect devices being characterized by | | |
| having an organic thin film semiconductor member | 20 | 20 |
| of a compound having an N,N"-di(n-1H, 1H-perfluorooctyl) | | |
| perylene 3,4,9,10- tetracarboxylic acid diimide structure | Fig. 3 | Fig. 3 |
| extending over said source and drain electrodes | 10 and 12 | 10 and 12 |
| and in contact with said gate dielectric. | 16 | 16 |

| | | |
|--|-----------|-----------|
| 12. The improvement of claim 10 wherein | | |
| in said thin film field effect semiconductor devices | In Fig.1 | In Fig 2 |
| there is a substrate | 18 | 18 |
| with a gate electrode | 14 | 14 |
| that is covered by a gate dielectric , | 16 | 16 |
| | | |
| said devices being characterized by having an | | |
| organic thin film semiconductor member | 20 | 20 |
| of a compound having an N,N"-di(n-1H, 1H-perfluorooctyl) | | |
| perylene 3,4,9,10- tetracarboxylic acid diimide structure | Fig. 3 | Fig. 3 |
| positioned in contact with and extending over said gate dielectric, and, | 16 | 16 |
| source and drain electrodes | 10 and 12 | 10 and 12 |
| | | |
| positioned in contact with said organic thin film semiconductor member | 20 | 20 |
| and aligned with said gate. | 14 | 14 |

In the examination an assumption appears to have been made that the claimed invention is something other than as described above.

With respect to the 5/6/04 final rejection Office Action.

A demand stands advanced, as an objection to the drawings, that Figs 1 and 2 be each labelled - Prior Art - on an assumption that, only that which is old, is illustrated. The demand is accompanied by assertions that drawing corrections must immediately be made to avoid abandonment, and that they will not be held in abeyance.

It is appellants' position that the claimed structures of Figs. 1 and 2 each require a film of the material depicted in Fig. 3 to describe the invention so that to introduce a prior art label would produce an incorrect impression. This is considered to be a substantive matter.

In this appeal it will be an appellants' issue that that demand is based on an assumption originating from an "out of context" quotation from the specification that is inconsistent with the invention explanation.

The reasoning is as follows.

In the final rejection there is reliance on, "(See specification p 3 lines 3 - 5.)", as support. Those lines 3 - 5, describing Figs 1 and 2, are out of the context of the specification. They are part of the narrative **DESCRIPTION OF THE INVENTION** portion of the specification.

In contrast the intended **BRIEF DESCRIPTION OF THE DRAWINGS** section on page 2 states:

"Figures 1 and 2 are cross sectional views of N,N' 3,4,9,10 perylene tetracarboxylic diimide semiconductor material organic thin film transistors, wherein in Fig. 1 a bottom contact configuration is illustrated and in Fig. 2 a top contact configuration is illustrated.

Figure 3 is a diagrammatic depiction of the chemical structure of a fused-ring tetracarboxylic diimide compound based on a perylene framework used in the thin film of the invention such as the N,N' 3,4,9,10 perylene tetracarboxylic acid diimide that is illustrated.

It is submitted the better description of a drawing element would be in the portion of the

specification whose function is to describe the drawings so that to label Figs. 1 &2 as being prior art is to produce an incorrect description.

With respect to the rejections on art in the 5/6/04 final action.

In the rejection of Claim 10, on the Struijk reference in view of the Katz reference, much more structure is asserted as meeting appellants' claim limitations than appears to be in the teaching of the reference and particularly in the figure and paragraphs listed in the rejection. It is submitted that the Struijk reference speaks so broadly that such meeting of appellants claim limitations is viewed as unlikely. The discussions involving the interpretation of a claim as being a product by process are rendered moot by the ex Parte Jepson claim format which is much more direct. The paragraph on page 3 that is relied on in the APA assertion is the same out of context one discussed above concerning the objection to the drawings.

In the rejection of claims 11 and 12 on Struijk in view of Katz and Dodalapur appellant is unable to find teaching specific to the limitations asserted to be taught.

In view of the above it is respectfully urged that serious consideration be given to the fact that when the art is viewed in the light of the claim language the claims patently distinguish over the art by the combined requirements of contact location, the location of the film and the specific composition of the film and thereby describe a patentable invention and a valuable contribution to the art.

The application is considered to be in condition for allowance.

Respectfully submitted,

Alvin J. Riddles 8/13/04

Alvin J. Riddles

Reg. No. 17862

914 946-2249

(ix) Evidence Appendix Section "E" - Notification of Non-Compliance with 1.192(c)

| | | |
|--|-------------------------------|--|
| Notification of Non-Compliance With 37 CFR 1.192(c) | Application No. 10/014,788 | DIMITRAKOPoulos ET AL. Att Unit 2813 |
| | Examiner Erik Kiehn | |

-The MAILING DATE of this communication appears on the cover sheet with the correspondence address-

The Appeal Brief filed on 25 October 2004 is defective for failure to comply with one or more provisions of 37 CFR 1.192(c). See MPEP § 1208.

To avoid dismissal of the appeal, applicant must file IN TRIPPLICATE a complete new brief in compliance with 37 CFR 1.192(c) within the longest of any of the following three TIME PERIODS: (1) ONE MONTH or THIRTY DAYS from the mailing date of this Notification, whichever is longer; (2) TWO MONTHS from the date of the notice of appeal; or (3) within the period for reply to the action from which this appeal was taken. EXTENSIONS OF THESE TIME PERIODS MAY BE GRANTED UNDER 37 CFR 1.136.

1. The brief does not contain the items required under 37 CFR 1.192(c), or the items are not under the proper heading or in the proper order.
2. The brief does not contain a statement of the status of all claims, pending or cancelled, or does not identify the appealed claims (37 CFR 1.192(c)(3)).
3. At least one amendment has been filed subsequent to the final rejection, and the brief does not contain a statement of the status of each such amendment (37 CFR 1.192(c)(4)).
4. The brief does not contain a concise explanation of the claimed invention, referring to the specification by page and line number and to the drawing, if any, by reference characters (37 CFR 1.192(c)(5)).
5. The brief does not contain a concise statement of the issues presented for review (37 CFR 1.192(c)(6)).
6. A single ground of rejection has been applied to two or more claims in this application, and
 - (a) the brief omits the statement required by 37 CFR 1.192(c)(7) that one or more claims do not stand or fall together, yet presents arguments in support thereof in the argument section of the brief.
 - (b) the brief includes the statement required by 37 CFR 1.192(c)(7) that one or more claims do not stand or fall together, yet does not present arguments in support thereof in the argument section of the brief.
7. The brief does not present an argument under a separate heading for each issue on appeal (37 CFR 1.192(c)(8)).
8. The brief does not contain a correct copy of the appealed claims as an appendix thereto (37 CFR 1.192(c)(9)).
9. Other (including any explanation in support of the above items):

See attached pages.

Application/Control Number: 10/014,766

Art Unit: 2813

In support of item 5 on form PTOL-462, Notice of Non-Compliance with 37 CFR 1.192(c), MPEP 1206 under the section entitled, "Appeal Brief Content" states,

"(6) Issues. A concise statement of the issues presented for review. Each stated issue should correspond to a separate ground of rejection which appellant wishes the Board of Patent Appeals and Interferences to review. While the statement of the issues must be concise, it should not be so concise as to omit the basis of each issue. For example, the statement of an issue as "Whether claims 1 and 2 are unpatentable" would not comply with 37 CFR 1.192(c)(6). Rather, the basis of the alleged unpatentability would have to be stated, e.g., "Whether claims 1 and 2 are unpatentable under 35 U.S.C. 103 over Smith in view of Jones," or "Whether claims 1 and 2 are unpatentable under 35 U.S.C. 112, first paragraph, as being based on a nonenabling disclosure." The statement would be limited to the issues presented, and should not include any argument concerning the merits of those issues."

With the above in mind, the issues presented on p. 5 of the Brief do not comply because they are not a concise statement of the issues. For additional example, if Appellant challenges the status of instant Figs. 1 and 2 as prior art, then the issues should so state. A statement such as, "Whether or not Figs. 1 and 2 constitute prior art based upon the evidence of record" would be a concise statement of the issue.

In support of item 7 on form PTOL-462, Notice of Non-Compliance with 37 CFR 1.192(c), the issues presented on page 6 are not separately addressed nor is each issue presented under separate heading.

In further support of item 9 on form PTOL-462, Notice of Non-Compliance with 37 CFR 1.192(c), the brief does not contain, for each rejection under 35 U.S.C. 103, an argument which specifies the errors in the rejection and, if appropriate, the specific limitations in the rejected claims which are not described in the prior art relied upon in the rejection, and an explanation how such limitations render the claimed subject matter unobvious over the prior art. If the

Application/Control Number: 10/014,766

Art Unit: 2813

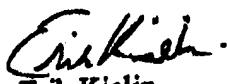
rejection is based upon a combination of references, the argument must explain why the references, taken as a whole do not suggest the claimed subject matter, and shall include, as may be appropriate, an explanation of why features disclosed in one reference may not be properly combined with features disclosed in another reference. A general argument that all the limitations are not described in a single reference does not satisfy the requirements of 37 CFR 1.192(c)(8)(iv).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erik Kielin whose telephone number is 571-272-1693. The examiner can normally be reached on 9:00 - 19:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr. can be reached on 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Erik Kielin
Primary Examiner
December 2, 2004

(ix) Evidence Appendix Section "F"

**Notification of Non-Compliant Appeal Brief
(37 CFR 41.37)**

| | | |
|-----------------|------------------------|--|
| Application No. | Applicant(s) | |
| 10/014,766 | DIMITRAKOPoulos ET AL. | |
| Examiner | Art Unit | |
| Erik Klein | 2813 | |

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

The Appeal Brief filed on 24 February 2005 is defective for failure to comply with one or more provisions of 37 CFR 41.37.

To avoid dismissal of the appeal, applicant must file a complete new brief in compliance with 37 CFR 41.37 within ONE MONTH or THIRTY DAYS from the mailing date of this Notification, whichever is longer. EXTENSIONS OF THIS TIME PERIOD MAY BE GRANTED UNDER 37 CFR 1.136.

1. The brief does not contain the items required under 37 CFR 41.37(c), or the items are not under the proper heading or in the proper order.
2. The brief does not contain a statement of the status of all claims, (e.g., rejected, allowed or confirmed, withdrawn, objected to, canceled), or does not identify the appealed claims (37 CFR 41.37(c)(1)(iii)).
3. At least one amendment has been filed subsequent to the final rejection, and the brief does not contain a statement of the status of each such amendment (37 CFR 41.37(c)(1)(iv)).
4. (a) The brief does not contain a concise explanation of the subject matter defined in each of the independent claims involved in the appeal, referring to the specification by page and line number and to the drawings, if any, by reference characters; and/or (b) the brief fails to: (1) Identify, for each independent claim involved in the appeal and for each dependent claim argued separately, every means plus function and step plus function under 35 U.S.C. 112, sixth paragraph, and/or (2) set forth the structure, material, or acts described in the specification as corresponding to each claimed function with reference to the specification by page and line number, and to the drawings, if any, by reference characters (37 CFR 41.37(c)(1)(v)).
5. The brief does not contain a concise statement of each ground of rejection presented for review (37 CFR 41.37(c)(1)(vi)).
6. The brief does not present an argument under a separate heading for each ground of rejection on appeal (37 CFR 41.37(c)(1)(vii)).
7. The brief does not contain a correct copy of the appealed claims as an appendix thereto (37 CFR 41.37(c)(1)(viii)).
8. The brief does not contain copies of the evidence submitted under 37 CFR 1.130, 1.131, or 1.132 or of any other evidence entered by the examiner and relied upon by appellant in the appeal, along with a statement setting forth where in the record that evidence was entered by the examiner, as an appendix thereto (37 CFR 41.37(c)(1)(ix)).
9. The brief does not contain copies of the decisions rendered by a court or the Board in the proceeding identified in the Related Appeals and Interferences section of the brief as an appendix thereto (37 CFR 41.37(c)(1)(x)).
10. Other (including any explanation in support of the above items):

37 CFR 41.37(c)(1) states, "The brief SHALL contain the following items under appropriate headings and in the order indicated in paragraphs (c)(1)(i) through (c)(1)(x) of this section, except that a brief filed by an appellant who is not represented by a registered practitioner need only substantially comply with paragraphs (c)(1)(i) through (c)(1)(iv) and (c)(1)(vii) through (c)(1)(x) of this section" (Capitalized emphasis added.) If there is no pertinent information to place in these sections, the section nonetheless, "shall" be present. The sections should simply indicate that there is no such information.


Erik Klein
Primary Examiner

(ix) Evidence Appendix Section "B" Table of Citations

1. **In Re Geerdes** 180USPQ 789 (1974)
2. **Kropa v Robie and Mahlman** 88USPQ 478 (1951)
3. **Ex Parte Levengood** 28USPQ2d1300 (CAFC 1993)
4. **Dickenson v Zurko** 527 U.S. 150, 50USPQ2d1930(CAFC 1999)
5. **In Re. Lee** 61USPQ2d1430 (CAFC 2002)

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